The HELM

Illinois-Indiana Sea Grant Fall 2008

Living Near Waterways Can Be a Plus or a Minus

By Irene Miles

Decades of industry in the Great Lakes region have left many polluted lakes and rivers. These years of environmental degradation have also taken an economic toll on the communities along these waterways.

John Braden, a University of Illinois economist, found that property values for homes near contaminated waterways can be significantly depressed. With funding, in part, from Illinois-Indiana Sea Grant (IISG), Braden's team looked at houses near the Sheboygan River in Sheboygan County, Wisconsin. This study was complemented by a similar one in Buffalo, New York.

John Braden

Despite the beauty of the Sheboygan River as it passes through Kohler, WI, toxic contaminants can be found in the river sediments.

The researchers used two methods to answer the question of how a polluted river impacts housing prices. "We looked at actual sales of single family houses in the area from 2002-2004," explained Braden. "And we surveyed 850 residents to understand people's perceptions of the river, and their willingness to pay more for housing if the river is cleaned up."

Using hedonic analysis of property sales, Braden found that for owner-occupied homes within five miles of the Sheboygan River Area of Concern, the overall estimated loss of value is $158 million, which translates into an 8 percent discount, on average. "The impacts are

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Two States Caring for One Great Lake

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IISG Fellow Finds Fish Consumption Advisories Effective

University of Illinois graduate Cameron Speir's fellowship with National Marine Fisheries Service (NMFS) produced more than something nice to add to his resume. The results from his research provide policy makers with evidence confirming the effectiveness of fish consumption advisories.

"Fish consumption advisories are a way to reduce human exposure to toxic contamination while avoiding expensive cleanups," said Speir, who received his Ph.D. in Agricultural and Consumer Economics. "These advisories are voluntary, so there is no guarantee that exposure to toxins will be reduced simply by issuing an advisory."

To test the effectiveness of advisories, Speir used 19 years of creel survey data. He focused on advisories that encouraged anglers to collect larger Chinook salmon and advisories that encouraged anglers to collect fewer yellow perch. According to his results, fish consumption advisories on both fish produced the intended effects—anglers kept *larger* Chinook salmon and *fewer* yellow perch.

Speir completed his fellowship, which was sponsored by Illinois-Indiana Sea Grant, in late July. "It turned out to be a great opportunity for me," said Speir. "The fellowship provided support throughout the two-year process."

Speir said he definitely accomplished what he set out to do. He added that the most beneficial part was working on papers with economists at NMFS. "It was nice to be able to develop contacts outside of the university," he commented.

Following his fellowship, Speir received a job as an economist at NMFS in Santa Cruz, California and started work there in August. "The job is doing research on my dissertation topic," said Speir. "So, it worked out pretty well."

The **HELM**

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New Web Site Kicks Off eCycling Campaign

By Jason Peterson

The U.S. EPA and IISG are hoping that what happens in Vegas does not really stay in Vegas.

They officially kicked off a campaign for environmentally-sound computer electronics management, which includes reuse, recycling and sensible disposal—called "ecycling"—at this year's Consumer Electronics show in Las Vegas, Nevada. While major companies debuted their top-of-the-line electronics, EPA and IISG launched their green computer web site—www.ecyclingtools.com.

"The web site is a one-stop shop," says Susan Boehme, IISG coastal sediment specialist and co-developer of the site. "When people buy computers, printers and other peripherals, especially in larger numbers for businesses, they can now make choices based on contaminants and energy efficiency."

IISG created the web site, which features ecycling tools developed by EPA and others, as a part of a grant from EPA to market their green electronics campaign. "Sea Grant is able to provide the outreach necessary to inform the public," said Boehme. "Taking the information out to the community is what Sea Grant is all about."

The idea for the campaign came out of the Great Lakes Regional Collaboration (GLRC), a multi-state cooperative effort to establish one large-scale blueprint for improving the health of the Great Lakes region. "This year, the GLRC called for the establishment of more collection programs to prevent pollution," said Boehme.

The EPA responded by creating ecycling tools, which serve as an informational resource for individuals and businesses buying and disposing of electronics. "We provide tools, resources and information for people looking to donate, recycle or reuse computers," says EPA environmental scientist Chris Newman, who played a key role in the development of these services.

The web site offers a handful of purchasing tools, including the Electronics Purchasing Environmental Assessment Tool (EPEAT), which was developed through stakeholder input. "EPEAT is a registration system, mutually agreed upon by purchasers and the electronics industry, that allows someone buying a computer to have access to a set of qualifications for green computers," said Newman.

"This is something a purchaser can drop into a contract the same way they would specify things like memory, processor speed and hard drive size," added Newman.

The web site also provides a slew of resources for donating computers, including a link to the web site Earth 911 (www.earth911.org/electronics). On this site, people can find nearby locations to donate computers. The only downside is that it's only for individuals, not businesses.

Despite the campaign's infancy, interest in ecycling is steadily increasing. "I think we're going to see more emphasis on ecycling as a part of the mainstream solid waste management program across the country," said Newman. "There are a lot of state and local programs heading that way."

Lake Michigan Becomes the Classroom for COSEE Teacher Workshop

For one week in August, 17 teachers immersed themselves in the life, poetry, and beauty of Lake Michigan. This was no summer vacation however—these teachers came ready to learn and they weren't disappointed.

The Lake Michigan Exploration Workshop, sponsored by COSEE Great Lakes, brought biologists, geologists, and other scientists and experts together with teachers for an intensive week of knowledge sharing. "Through personal experience and the latest science, we are helping to bring the Great Lakes into the classroom," said Robin Goettel, IISG associate director for education, who organized this workshop.

COSEE, which stands for Centers for Ocean Sciences Education Excellence, is funded through the National Science Foundation Division of Ocean Sciences to facilitate collaboration and communication between ocean science researchers and educators. In 2005, with additional funding from NOAA-Sea Grant, COSEE Great Lakes was established.

Each summer, the COSEE Great Lakes Team, comprised of educators from the Great Lakes Sea Grant Network, hold an exploration workshop on one of the Great Lakes. This year's took place along the southern shores of Lake Michigan, with Chicago as home base, and included excursions to Milwaukee and to the Indiana Dunes National Lakeshore. "Throughout the week, teachers learned from scientists, but at the same time, scientists learned from teachers how new knowledge can be adapted into classroom curriculum," said Goettel.

Jim Lubner, Wisconsin Sea Grant educator, describes the impact of coastal erosion along Milwaukee's beachfront.

In the waters off the shore of Milwaukee, teachers and non-formal educators from around the Great Lakes (and one from Georgia) spent time learning about Lake Michigan habitats aboard the R/V Neeskay. They joined Carmen Aguilar and Russell Cuhel, scientists at the University of Wisconsin-Milwaukee Great Lakes Water Institute, taking samples of the water and of quagga mussels, which have swiftly replaced zebra mussels in the lake as an invasive threat.

Kay Swartzlander

Jennifer Fleck, a Chicago high school teacher, looks on as Russell Cuhel, a scientist aboard the R/V Neeskay, talks about water sampling.

At the Great Lakes Water Institute lab, teachers got hands-on experience analyzing samples, including using calipers to measure the length, width and height of living quagga mussels.

Back in Chicago, the topic shifted to contaminants that impact the health of the ecosystem as well as the safety of fish consumption. Several scientists, including Todd Nettesheim, U.S. EPA Great Lakes National Program Office, and Marisol Sepulveda of Purdue University, shared the latest research on mercury, PCBs and emerging contaminants such as pharmaceutical waste. "As scientists, we usually revolve around our own research projects and forget how important it is to share our knowledge with the general public, and even more importantly, with educators," commented Sepulveda.

These discussions were followed by a tour of the Stickney Water Reclamation Plant. The day, however, ended

on a lyrical note. At the Peggy Notebaert Nature Museum, which provided facilities and resources for the workshop, the participants sat in the summer evening while women writers read their essays and poems from a collection focused on the Great Lakes.

The Indiana Dunes National Lakeshore provided the backdrop to learn about the geology and ecology of the dunes. Wendy Smith, a National Park Service educator, and Todd Thompson, with the Indiana Geological Survey, engaged teachers in 'on-the-sand' activities and discussions. Finally, back in Chicago, invasive species became the main focus at the Shedd Aquarium. "Nadine Folino-Rorem of Wheaton College wowed teachers with her talk about *Cordylophora caspia*, an amazing invader that both hosts and preys on zebra mussels," said Goettel. IISG's Kristin TePas provided an aquatic invasive species overview and took the group fishing for round gobies in nearby Burnham Harbor. Teachers also took part in a behind-the-scenes tour of the aquarium's Great Lakes Invasions exhibit. "I really appreciated the diversity of activities and just loved all the information that was shared from scientists," said Elizabeth Wilkins, who teaches high school marine biology in Chicago.

Kay Swartzlander

Wendy Smith, a 4th grade teacher from New York, catches a round goby, a Lake Michigan invasive species.

COSEE Great Lakes Director Rosanne Fortner and project reviewers Don Elthon, NSF, and Sharon Walker, NOAA, join teachers on the rooftop of the Peggy Notebaert Nature Museum, the primary workshop host.

Finally, the week culminated in presentations created by teachers grouped into elementary, middle, and secondary grade levels. The goal was to develop ways to bring their new scientific knowledge to a level appropriate for their students. The teachers developed an interactive food web game, a watershed simulation activity, poetry, a story book, and more. "These activities focused on the content of the workshop, ranging from quagga mussels and other invaders to coastal geology, effects of contaminants on fish, and dune ecology," said Goettel.

Science is ever changing and advancing," said Jennifer Fleck, a teacher from Gage Park High School in Chicago. "Having the opportunity to connect with those on the cutting edge and those who can connect teachers to those on the cutting edge is priceless."

The Lake Michigan Exploration Workshop was a collaborative effort of a team of specialists from Great Lakes Sea Grant programs and other institutions. This project brought together the talents of Terri Hallesy, Jennifer Fackler, Robin Goettel, Jim Lubner, Cindy Hagley, Howard Walters, Steve Stewart, Rochelle Sturtevant, and Marti Martz.

Check out the Lake Michigan Exploration Workshop blog: **coseegreatlakes.net/weblog/category/lake-michigan-exploration-workshop.**

Living Near Waterways Can Be a Plus or a Minus

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concentrated in the more populated areas nearest the lower river," he said.

About 14 miles of the Sheboygan River has been designated an Area of Concern by the U.S. EPA, which means that the waters have been significantly impaired by pollutants such as nitrogen, PCBs, and heavy metals. While upper sections of the river have been restored, Braden's study focused on residents living in the lower sections of the river, which have not yet been cleaned up. In survey results, less than 20 percent of respondents viewed the river as environmentally safe.

In the survey, Braden also posed some choices for residents to ascertain the monetary value of a clean river. "Through these hypothetical tradeoffs, residents expressed a willingness to pay 10 percent more for single family homes for a full cleanup of the Area of Concern," said Braden. Altogether, that is $218 million (in 2004 dollars).

"These results give academic weight to concerns that communities have been economically disadvantaged due to their proximity to impaired waters," said Braden. Braden's study in Buffalo found similar results.

For some communities, the Great Lakes Legacy Act has offered an opportunity to turn things around. The Act authorized $270 million to remove contaminated sediment from Areas of Concern. So far, this effort has leveraged $44 million in nonfederal funds to remove over 1,500,000 pounds of contaminants at five completed project sites in Michigan, Wisconsin, and Ohio. Several more sites are in progress or are scheduled for restoration. As the remediation process takes place, IISG, with funding from the U.S. EPA Great Lakes National Program Office (GLNPO), provides information and support to local residents. This support continues as residents work together to develop plans for their restored waterfront.

"We are seeing wonderful improvements in communities after the remediation projects are completed," said Susan Boehme, IISG coastal sediment specialist. "For example, before, in Muskegon, Michigan, children were kept away from Ruddiman Pond and Creek for fear of the contamination. Now it's a place where people canoe and kayak. Weddings and other special events take place on the shores of the pond. In Ashtabula, Ohio and Trenton, Michigan there are more success stories to tell. These cleanups help the communities obtain additional funding to improve shoreline habitat, add marinas and docks, and provide more recreation opportunities."

IISG Wins Two Extension Awards of Excellence

IISG won twice at this year's University of Illinois Extension awards banquet. Two Sea Grant projects were chosen for the 2008 Outstanding or Innovative Programming Team Award.

The award went to *Extension Meets Service Learning*, a new University course, funded through the Provost's office. This course brings together many partners, including college students, grade school students, and community organizations, to raise awareness about invasive aquatic species and the role people can play in preventing their spread. The team is comprised of Robin Goettel, associate director for education, and Terri Hallesy, education specialist, along with Valerie Werpetinski, U of I Center for Teaching Excellence, and Corey Suski and Joanne Vining, natural resource professors.

Also winning was *Disposal of Unwanted Medicine*, a project funded through U.S. EPA GLNPO that provides tools and information to communities interested in developing unwanted medicine collection programs. Unwanted medicine is often flushed away, ending up in lakes and rivers, impacting aquatic wildlife. Susan Boehme, coastal sediment specialist, and Beth Hinchey Malloy, Great Lakes ecosystem specialist, share this award.

Aquatic Invaders Web Site Spreads Beyond the Internet

Deck of Cards Introduces Colorful Characters

Teachers take note: for a new approach to ecology, introduce your students to card games such as "Invader Hide and Seek," "Exotic Species Recall" and "The Lonely Police Chief." *Nab the Aquatic Invader! Game Cards* (for grades 4–10) provides a chance to learn about aquatic invasive species and their impacts on food webs. Based on 26 characters depicted on the *Nab the Aquatic Invader!* web site, www.sgnis.org/kids, these colorful renderings make learning fun. To order one deck of cards, send a check for $1.25 (to cover shipping) payable to University of Illinois to Susan White, Illinois-Indiana Sea Grant, 338 NSRC, 1101 W. Peabody, Urbana, IL 61801.

Wanted Posters Lay Out Aquatic Invader Crimes

These fact-filled laminated posters will help students in grades 4–10 understand the impacts posed by aquatic invasive species. Based on characters from the *Nab the Aquatic Invader!* web site, www.sgnis.org/kids, these species are colorful crime suspects. Through detective interrogations, *Nab those Menacing Invaders! Poster Set* lays out the biology, transport, impacts and control methods for 10 Great Lakes invaders. For a free set of 11 by 14 inch posters, send check for $2.50 (to cover shipping) payable to University of Illinois to Susan White, Illinois-Indiana Sea Grant, 338 NSRC, 1101 W. Peabody, Urbana, IL 61801.

Nab the Aquatic Display Reaches New Audiences

As part of the Museum of Science and Industry's Science Chicago, in September, IISG took part in Lab Fest, informing audiences of all ages about invasive aquatic species. With a display based on the *Nab the Aquatic Invader!* web site, more than 300 visitors took part in identifying invaders by reading clues from their criminal 'rap sheets.' This exhibit recently won an Apex Award of Excellence in the category One-of-a Kind Science and Environment Publications. The award is shared by Susan White, graphic designer, Jennifer Fackler, program specialist, and Dave Brenner, an illustrator, formerly with Michigan Sea Grant.

Sea Grant Staff Update

IISG Welcomes Onboard New Water Supply Economist

Margaret Schneemann is the program's new water resource economist. This position is part of a partnership between IISG, the Chicago Metropolitan Agency for Planning (CMAP), and the University of Illinois Extension. Schneemann is located in the CMAP offices in Chicago, where she is overseeing economic analysis to support the development and implementation of a sustainable water use and supply plan for the Chicago region. She is examining the benefits and costs of the water supply planning process, including the cost-effectiveness of specific water conservation measures, and developing an optimal water pricing schedule for the region.

For the past seven years Schneemann has taught economics, finance and statistics at Robert Morris College while pursuing her doctorate in economics at the University of Illinois at Chicago. She has also been a consultant for a variety of businesses and educational and government institutions. Schneemann holds a Master's degree in resource economics and policy from the University of Maine. She can be reached at mschneemann@cmap.illinois.gov.

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